Hatchery Implementation Team

PUBLIC DISCUSSION DOCUMENT

Introduction

In December 2001 a Joint Hatchery Review Committee (JHRC) completed a review of California's anadromous fish hatcheries. The purpose of the review was to evaluate the effects of hatchery operations on listed salmon and steelhead populations. In its final report[1], the JHRC made thirteen general recommendations and several more that were specific to individual hatcheries.

In its letter transmitting the report to the Department of Fish and Game (DFG) and the National Marine Fisheries Service (NMFS), the JHRC recommended that an implementation team be formed to evaluate the report and suggest steps to implement the recommendations. Part of this process is to receive public input. This discussion document was prepared to assist in that effort.

The Hatchery Implementation Team (HIT) began meeting in August 2002. It has reviewed and discussed the JHRC report recommendations, but it has not yet reached conclusions on them (in a few instances, however, the DFG has already made some changes based upon these recommendations). In the remainder of this document, the recommendations from the JHRC report are shown (in bold) along with some brief background information[2]. Some preliminary comments from the HIT are also included to indicate its first thoughts on the recommendations.

JHRC Report Recommendations

JHRC Recommendation 1: Adhere to the existing State policy of restricting inter-basin transfers of anadromous salmonids.

- **Discontinue the transfer of steelhead or chinook salmon from Nimbus or Feather River hatcheries to the Mokelumne River Hatchery.**

Background: The JHRC was concerned that such transfers could affect the genetic resources in fish naturally occurring in the receiving basins.

HIT comments: *The HIT is supportive of this recommendation. It has determined that no*

[1]The JHRC report is still available on the DFG website (www.dfg.ca.gov). Click on Fish Hatcheries, then Hatchery Review Report. There are two files - the report and its appendices.

[2]For more details, see the JHRC report.

transfers are now occurring from Nimbus to Mokelumne, and that no chinook salmon are being transferred from Feather to Mokelumne. Steelhead eggs are still being transferred from Feather to Mokelumne; without this transfer, Mokelumne would not be able currently to meet its steelhead production goals. The HIT has not yet commented on this specific transfer.

JHRC Recommendation 2: The Department should evaluate the risks and benefits associated with off-site hatchery releases.

- **Fall chinook from the Feather River, Nimbus, and Mokelumne River hatcheries should be considered for release "in river".**
- **Continue on-site releases of salmon and steelhead produced at Klamath-Trinity Basin hatcheries.**

Background: The JHRC concluded that although the present practice of releasing significant numbers of hatchery salmon in San Pablo Bay results in greater returns to fisheries, it also increases straying of returning adult hatchery-reared salmon. This poses management, ecological and genetic hazards to natural salmon populations in streams where straying occurs. "In-river" means at the hatchery or a more appropriate site downstream.

HIT comments: *The HIT is supportive of this recommendation. It intends to explore the considerations in the specific recommendation concerning releasing all fall run at Feather, Nimbus and Mokelumne hatcheries.*; *it is likely that pilot studies and additional experiments will be necessary and appropriate there before future decisions are finalized to release these fish "in-river". These studies would probably entail releasing some tagged fish at the hatchery and some in San Pablo Bay. Differences to be measured between these groups include rates of contribution to fisheries, return to the hatcheries, and straying into Central Valley streams. These studies need to be planned carefully to yield valid results, and they would require adequate funding and monitoring efforts to recover tags - see also the JHRC recommendations 6, 7, and 8.*

JHRC Recommendation 3: Hatchery releases and water management practices must be coordinated so that emigrant fish survival is maximized. This would be increasingly important if more hatchery fish are released "in river".

Background: Biologists and water project operators now stay informed of hatchery fish releases, but changes in project operations are only made to protect listed salmonids (e.g., winter-run and spring-run chinook).

HIT comments: *The HIT is supportive of this recommendation. It would probably require establishment of a formal mechanism (a group and process) for this to happen.*

JHRC Recommendation 4: Chinook salmon planted in inland waters should be sterilized to prevent genetic transfers by fish that might escape downstream. Build in an evaluation component.

Background: The JHRC raised concerns on this subject because of the possibility of planted salmon, in some cases from out-of-basin stocks, escaping downstream from the lake in which they were planted. The issue is the subsequent return of these fish as adults into that stream and the chance of genetically mixing with natural salmon from that stream.

HIT comments: *The HIT has attempted to quantify the magnitude of this potential problem. It has become aware of two instances where data are available. In the 1990s, chinook salmon planted in Lake Oroville were tagged with reward tags; anglers reported catching nine of those fish downstream or in the ocean. Those nine fish represented 0.2% of the 4,312 fish that were reward-tagged in 1992, 1993, and 1996. In the other case, one of 400 reward-tagged salmon released in Folsom Lake in 1997 was recovered down stream. In both waters, other groups of fish with reward tags have been released but no fish were recovered downstream.*

The DFG is conducting tests to arrive at an acceptable procedure to sterilize young salmon used in reservoir plants. The HIT believes that the risk from downstream of reservoir-planted fish is minimal, but it is supportive of the sterilization approach if it is feasible.

JHRC Recommendation 5: **Suspend salmon fry releases into selected Sacramento River tributaries unless there is a better-defined need. Build in an evaluation component if the program is resumed.**

Background: Since the early 1980s The DFG planted hatchery-produced chinook salmon fingerlings or fry in some Central Valley streams that presumably no longer had natural salmon runs. The JHRC was concerned that there were no evaluations of the benefits of this program and that potential harm could come from it if, in fact, these fish were being planted on top of remnant natural runs.

HIT comments: *The HIT has determined that the DFG has eliminated this program.*

JHRC Recommendations 6, 7, and 8:

6. **Establish constant fractional marking programs at all anadromous hatcheries.**
   - **Design studies to determine the effects of hatchery practices and releases on natural population genetics and dynamics.**

7. **Develop and implement adequate sampling programs to recover marked salmonids in the Central Valley.**

8. **Establish a process to standardize and coordinate methodologies for estimating salmon escapements in the Central Valley.**

Background: A fractional marking (25% of production) program already exists at Trinity River hatchery. While some marking of salmon now occurs in Central Valley hatcheries and some monitoring of returning adult runs take place, both efforts are relatively low and variable. This prevents a full evaluation of the genetic and ecological effects of hatchery rearing and release strategies on natural salmon populations. It also precludes the calculation of exploitation rates

for Central Valley salmon populations.

A constant fractional marking program and complementary inland monitoring program would allow the DFG to differentiate between natural and hatchery fish spawning in streams, clarify the abundance and distribution of hatchery fish in the system, determine their relative contribution to commercial and sport harvests, and evaluate factors affecting fish survival.

HIT comments: *The HIT is supportive of these recommendations. It has learned that a contract has been let to Humboldt State University to develop a plan to begin a constant fractional marking program at Central Valley hatcheries. The plan should be available in December 2003. In addition, the HIT is aware that in the Summer of 2002 the Interagency Ecological Program's Salmonid Escapement Project Work Team was formed with the goal of coordinating, standardizing, and improving salmonid escapement monitoring programs in the Central Valley. The team has recently initiated development of a Central Valley Salmon Escapement Monitoring Plan, which will describe programs to improve the accuracy of salmon escapement estimates and the recovery of marked salmon.*

JHRC Recommendation 9: Establish a process to review periodically hatchery production levels in light of changes in mitigation goals, changes in habitat or harvest regimes, or new information on the effects of hatchery operations on natural anadromous fish populations.

- **Identify performance measures for each hatchery and assess them annually.**

Background: The production levels (numbers of fish released) of California's anadromous fish hatcheries were established many years ago. Since then there have been many changes (natural and man made) in related ocean and fresh water regimes, fishing practices and efforts, including restrictions to protect populations listed under the ESA. Returns of hatchery fish to the Central Valley have increased substantially in recent years. This "under harvest" (or "over production") of hatchery fish is frustrating to fishermen and fishery managers, and the excessive returns of hatchery fish to Central Valley streams may in some cases threaten the productivity of natural stocks.

HIT comments: *The HIT is supportive of this recommendation.*

JHRC Recommendation 10: Establish or review hatchery mating protocols to maximize effective population sizes (genetic diversities) and to prevent divergence of natural and hatchery stocks.

Background: Hatchery spawning operations include the selection of which fish to spawn and how to combine the gametes of those fish. Hatchery workers, therefore, decide the genotype of the next generation of hatchery fish. It is desirable to make that generation as close as possible to the natural one.

HIT comments: *The HIT has asked the DFG to compile the mating protocols for each hatchery and to provide how the hatcheries decide which eggs, fry, or smolts to rear.*

JHRC Recommendation 11: Develop a role for hatcheries in the recovery of ESA listed anadromous salmonids.

Background: There is opportunity to modify (in whole or in part) the role of certain State or private hatcheries from production to recovery. In the process, increasing emphasis would be placed on rearing listed species under modified hatchery conditions.

HIT comments: *The efficacy of this concept merits further study, and it will likely be considered when future Hatchery and Genetic Management Plans are prepared. Warm Springs hatchery is currently involved in this kind of effort for coho salmon.*

JHRC Recommendation 12: Develop Hatchery and Genetic Management Plans for all State anadromous hatchery programs.

Background: Most anadromous hatcheries directly or incidentally "take" salmonids that are listed under the federal Endangered Species Act (ESA). The ESA requires that such take be authorized by NMFS. One means of doing so, under Section 4(d) of the ESA, requires the preparation and subsequent approval of a Hatchery and Genetic Management Plan (HGMP). The HGMP is a document about the operations of a hatchery that details how listed salmonids are protected during and as a result of those operations.

HIT comments: *NMFS is proposing changes to its hatchery listing policy for Pacific salmon and will review the status of all west coast salmonid populations listed under the ESA in light of the new policy. NMFS has suggested that DFG delay preparation of HGMPs pending the completion of this process.*

JHRC Recommendation 13: **Continue to discuss options with NMFS for facilitating the permitting (under ESA) of Cooperative Rearing Programs (small private hatcheries).**

Background: Currently each small private hatchery is required to obtain an ESA Section 10 permit to authorize its operations if it is "taking" listed salmonids. The process is complicated and cumbersome. The DFG also provides State permits to and some oversight of these hatcheries, so the issue is could there be one, combined process (and possibly one Section 10 permit) through the State to authorize these facilities.

HIT comments: *The HIT agrees that discussions should continue between NMFS and DFG to simplify this process for these hatcheries.*

JHRC Recommendation 14: **Issues at specific hatcheries.** The following recommendations differ from the previous ones because they are more specific or apply only to specific hatcheries.

Warm Springs: Coordinate genetics studies with NMFS. *HIT: This is occurring.*

<u>Mad River</u>: Cease spawning Chinook and coho salmon. Review the potential uses for recovery purposes. *HIT: The DFG no longer spawns chinook or coho there.*

<u>Feather River</u>: Tag and release "in river" all spring-run salmon. Continue to explore options to separate returning adult spring- and fall-run salmon. *HIT: Feather River is beginning a study with the spring-run. It will release half of its production "in-river" and half in San Pablo Bay. Fish will be coded wire tagged and a monitoring program will be established to retrieve tags.*

<u>Klamath-Trinity Basin hatcheries</u>: Identify monitoring strategies to determine the status of naturally-spawning coho. Genetically characterize hatchery and natural coho stocks. Release production groups of fall chinook at Iron Gate Hatchery (IGH) as they reach 90/lb. Consider producing more yearling chinook and fewer smolts at IGH. Continue to evaluate the steelhead residualization problem at IGH.. Examine the current process of separating spring- and fall-run chinook at Trinity River Hatchery. *HIT: Efforts are occurring on all of these items.*

<u>Noyo and Van Arsdale</u>: Review the planting programs to determine genetic and ecological effects on natural stocks. *HIT: This is happening, including the collection of genetic tissue samples.*

<u>Nimbus</u>: Continue to look for sites to release steelhead in the American River. *HIT: This is occurring.*

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